

**Frequency estimates of emotions in everyday life from a diary method's perspective:  
a comment on Scherer et al.'s survey-study  
"Emotions in everyday life"**

Although there have been decades of intensive research on different facets of emotions (for an overview of current research topics see Davidson et al., 2003; Lewis and Haviland-Jones, 2000), we do not know much about the emotional experiences people usually have in their daily lives. In particular there is a lack of knowledge about the "incidence" of emotions in ordinary daily life. Therefore, the research questions of Scherer and his colleagues (this issue) about the probability of the occurrence of particular emotions during an ordinary day, about potential "risk factors",<sup>1</sup> respectively moderator variables and typical appraisal and reaction patterns, are of high interest.

To answer these questions Scherer et al. used a population-survey methodology by which they were able to collect data from more than 1,000 German- and French-speaking Swiss adults. Participants were asked to report an emotional event that happened "yesterday".

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The focus on yesterday's emotional events can be considered as real progress compared to previous questionnaire studies. In those studies participants reported on emotional experiences that had happened weeks ago (e.g. Scherer and Wallbott, 1994). Because recall biases increase with the time lag between the event and its recording, the reliability as well as the validity of such reports can be questioned.

Thus, Scherer et al.'s approach, asking people to report an event that elicited an emotion the preceding day, appears to be a quite reasonable strategy for obtaining information on how likely it is that an average person in a given population will experience a certain emotion. However, we think that this strategy also has some problems, which will be discussed here.

Imagine an ideal participant in the Scherer et al. study. She (or he) would do the following: She finds the letter from the Geneva research group, probably after coming home from work. She opens the letter, reads the background information and answers the questionnaire immediately. When she follows the instructions and recalls yesterday, she clearly remembers one event that caused her to experience a certain emotion. She completes the questionnaire and sends it back to the research group.

Although there are participants who behave this way, many do not. Methodological studies on diary research have revealed that participants often do not follow the instructions and tend to complete questions later than expected, while relying on their memory (e.g. Hank and Schwenkmezger, 1996; Stone et al., 2002). It is also quite probable that, in the Scherer et al. study, participants did not find the time to complete the questionnaire the same day. Thus, the latency between the event and its report might have been longer than expected, increasing the severity of recall biases. Other participants who did not remember an emotional event yesterday might have waited until an event occurred that seemed worthwhile reporting. For such participants the time frame was larger, and therefore the probability of finding an emotional event to report was higher. However, most people did not respond to the letter from the Geneva research group at all, and it is not known how many of the non-responders did not participate in the study because they did not remember an emotional event the day before. On the other hand we have strong reasons to believe that many of the participants experienced more than one emotional event the

previous day. However, to answer the questions of the Geneva group the subjects had to select just one event and ignore the others.

To summarize: there are different factors influencing the observed base rates of emotions in different directions. Until these factors can be quantified, the reported base rates are somehow arbitrary and rather biased estimates of the true base rates in the population.

In our commentary we would like to discuss these problems from a diary or experience-sampling perspective (Bolger et al., 2003; Buse and Pawlik, 1996; Csikszentmihalyi and Larson, 1987; Fahrenberg, 1996; Fahrenberg et al., 2002; Larson and Delespaul, 1992; Perrez et al., 2000; Wilhelm and Perrez, 2001). We will present results from the literature and from our own studies, which are based on diary and computer-assisted ambulatory assessment in daily lives. Comparison with quite similar questions answered with diary-assessment approaches will tell us whether Scherer et al.'s results can be confirmed or need to be modified.

### **Retrospective recall biases**

In the study of Scherer et al. participants were asked to report an emotional event that happened the preceding day. What they reported was therefore recalled from their long-term memory. There is an extensive literature on processes that may affect the retrospective recall of events and subjective experiences (Fahrenberg et al., 2002; Hufford et al., 2001). Before events and experiences can be recalled, they have to be encoded. Whether something is encoded or not is influenced by its salience, the person's state, distracting stimuli, etc. (encoding biases). The recall of an event or an experience depends on its proximity. More recent events are more accessible. In addition, people are likely to recall an event when they are in the same state or mood. Thus, they are more likely to recall a sad experience when they are in a sad mood than when in a happy mood and vice versa. Moreover, retrievals are influenced by tendencies to reconstruct events or experiences so as to make them consistent with memories and subsequent interpretations of events and experiences.

Although recall biases do increase with the amount of time elapsed between an event experienced and its report, there is evidence that recall biases already operate in the short term, when yesterday's events are remembered.

A negative bias has been found when diary reports of emotional and physical states and the occurrence of certain events have been compared to retrospective reports given one or several days later. The retrospective reports of states were worse than the actual states experienced (El-Giamal, 1999; Fahrenberg et al., 2001; Kappler and Rieder, 2001). The same was true for reports of negative events, like the frequency and severity of panic attacks (Margraf, 1990). These negative retrospective effects might be confounded with aggregation or summary biases that occur when an average state or the frequency of an event in a given time period has to be estimated (e.g. last day, last seven days, last month). However, in the data of the Third Fribourg Family Project (Perrez et al., in press) we found the same negative bias when family members judged how they felt yesterday morning. Although effects were smaller, they indicate that there is a tendency to remember one's state as worse than it was experienced at the time.

The fact that even short-term recall biases exist is a strong argument for getting information about the experience as rapidly as possible. This can be done by using a diary approach (event sampling or various time sampling over the course of a day) (e.g. Bolger et al., 2003; Fahrenberg et al., 2002). If, in addition, the diary is implemented on a handheld computer, the compliance of a person (like the time and duration of a report) can be strictly controlled.

For the Scherer et al. study we assume that results were influenced by recall biases. Due to the negative retrospection effect, we would expect that negative emotional events had a greater chance of being remembered and reported than positive events. As can be inferred from Scherer et al.'s Table 2, the frequencies of negative emotions seem to confirm our assumption. Approximately 57 percent of the emotions that could be classified had a negative valence, about 36 percent had a positive valence and about 7 percent were rather neutral, or could be either positive, negative or mixed. The high proportion of negative emotions becomes striking if one takes frequency estimates of negative and positive emotional states into account that are based on different diary and experience-sample studies (Kappler, 1994; Larson and Richards, 1994; Myrtek, 2004; Perrez et al., 1998b). In these studies in which the actual state was assessed at various times of the day, positive emotions were more frequent than negative emotions (see also our Table 1).

One might argue that differences between the diary studies and Scherer et al. in the assessment procedures as well as the samples may be responsible for the different results. However, the negative retrospection effect can not be ruled out as a plausible factor that biases the odd ratios of Scherer et al..

### **How many people did not experience any emotion yesterday?**

A crucial point for Scherer et al.'s intention to estimate base rates of the occurrence of emotions is the fact that it is unknown how many people did not participate in the study because they did not remember having experienced an emotional event the day before.

Scherer et al. tried to infer this frequency by assuming that a general response rate of about 35 percent could be expected in population surveys. In contrast to that expectation, their own response rate was rather low (about 17 percent). They concluded that this was in part due to people not having experienced an emotion the preceding day and therefore not participating. Their estimate was that one out of two people might not remember having experienced a strong enough emotional event the last day.

Using the data of the First Fribourg Family Project, we are able to contribute more empirical evidence on that question. In this diary study, which was conducted from 1996 to 1997 in Switzerland, we asked 96 mothers, 81 fathers and 162 adolescents from 96 families to report their current mood and feelings, and to answer additional questions 7 times a day over the course of one week. All together we obtained 15,907 single reports (Perrez et al., 1998a, 1998b; a detailed documentation of the diary can be found in Zbinden, 2003). Family members were instructed to respond to the questions after meals (breakfast, lunch, dinner) and at 11 am, 3 pm, 5 pm and 9 pm. To indicate their current feelings, they could choose from a list of items which best corresponded to their actual state (items are presented in Table 1). Analysis revealed that 90 percent of the parents and 97 percent of the adolescents reported at least one emotion per day.<sup>2</sup>

Results of other ambulatory assessment studies support our findings. Myrtek (2004) and colleagues (Myrtek et al., 2001) for example conducted three psychophysiological monitoring studies over 23 hours, in which they continuously measured different ECG

parameters and the physical activity of the participants (50 female and 50 male students). Every 10 to 20 minutes, participants received a signal that asked them to indicate if they were experiencing happiness, anger, anxiety, fear, sadness, surprise, disgust or "no emotion" at that particular moment (only one emotion could be chosen).<sup>3</sup>

Women reported feeling an emotion about 40 percent and men about 30 percent of the time. In addition participants had the opportunity to record their psychological state without being signaled, whenever they felt an emotion. Almost 80 percent of the women and at least 50 percent of the men used that option. Although Myrtek does not report how many participants experienced at least one emotion during the monitoring, we can infer from his data that almost everybody did.

Thus, we conclude that most people regularly experience some kind of emotion. According to Myrtek's and our own data, we estimate the base rate of experiencing any emotion on a given day to be 90 percent or more. However, if one asks people about yesterday's emotional experience, some of them may not remember that they had some kind of feeling, others may think their emotional experience was not worthwhile reporting, especially when the intensity was low and the underlying event quite ordinary. Therefore, we would expect that more people would report not having experienced an emotion if they were asked a day later.

### **How many times do people experience an emotion during an ordinary day?**

Scherer et al.'s probabilities will be too low if people frequently experience more than one emotional event per day. We refer to the studies we introduced before to obtain estimates of how many emotions people might experience over the day.

An average parent in the First Fribourg Family Project reported every second observation that he or she was feeling a certain emotional state ( $M = 52\%$ ,  $SD = 23$ ).<sup>4</sup> For adolescents this frequency was even higher ( $M = 71\%$ ,  $SD = 21$ ). This means that an average adult person felt an emotion at least three or four times a day. The standard deviation further indicates that there were huge individual differences. Some people reported experiencing an emotion in almost every situation, others indicated an emotion only two or three times during the whole week.

According to Myrtek's (2004) results, people tend to feel a specific emotion even more often: females about 20 times (40 percent of the observations) and males about 15 times (30 percent) per day.

The first conclusion to be drawn from these results is that an answer to the question how often people experience an emotion per day depends on how often and in what manner they are asked. In Myrtek's studies the frequency of single emotional events is overestimated when one does not take into account that one and the same emotion may last longer than a couple of minutes. According to Scherer et al. (Table 12) for example most participants experienced happiness as lasting an hour or longer. Thus, the number of distinct emotion-eliciting events is probably much smaller.

In addition, one might argue that the high frequency of emotional states in Myrtek's studies, but also in our family study, might in part be a result of a sensitization effect that is due to the questioning procedure. The repeated questioning directs the attention of the participants towards their emotional state and encourages them to report emotional states of low intensity. This is definitely true for our family study, in which intense emotional states were rare.

To summarize: although the number of different emotions experienced on a given day might be lower than the estimates drawn from Myrtek's studies, we believe that it is quite common that people experience more than one emotion per day. Thus, the Scherer et al. study is likely to underestimate the probability of experiencing a certain emotion on a given day because it allows participants to report only one emotion.

One reason why repeated emotional experiences can be observed on a single day might be that emotions are more likely to occur in clusters, within the broader context of one and the same event. Appraisal theory suggests that the appraisal of situations or events elicits emotions (e.g. Roseman and Smith, 2001; Scherer, 2001). If we assume that these events are particularly salient to the respondents, it is likely that the content of the experienced situation is not of an isolated significance but rather an issue that accompanies the respondent over a certain period of time. It is quite probable that, during the unfolding or temporal course of such an event, various appraisals are triggered. As conceptualized by Perrez and Reicherts (1992), in order to capture the appraisal of stressful events, one can think of different micro-episodes that occur within one and the same macro-event. Consequently the probability of

experiencing further emotions would be likely to be elevated as long as the issue is at stake.

In a situation of lost luggage, for example, as studied by Scherer and Ceschi (1997), a passenger might experience anger or worry at first and subsequently experience relief after obtaining positive information from the airline agent. Likewise he or she might first experience anger due to the loss of his or her luggage and then experience anger because of the unfriendly and unsupportive behavior of the airline agent or worry because he or she thinks that important items might have been lost definitely. These further emotions may be distinct from the initial emotions because they may occur after the offset of the initial experience and they may be based on appraisals with a different content.

We found empirical evidence for this reasoning in the data of our Second and Third Family Project, in which 314 participants from 96 families and 277 participants from 77 families, respectively, completed a diary that was implemented on a handheld computer (FASEM-C). Six times each day over the course of the week, every family member was asked, among various questions, how he or she felt at the current moment (for a more detailed description of the samples and the procedure see Perrez et al., 2000; Schoebi, 2004; Wilhelm, 2004). We found that the occurrence of a certain emotion increased the probability of experiencing the same or another emotion one or several observations later.<sup>5</sup> These effects can be understood as cluster effects with regard to the timeline. Parents in both samples were significantly more likely to report emotional experiences of worry, stress and anger if they had experienced the same type of emotion one, two or three observation periods before. Moreover, we found that, after experiencing anger, parents were more likely to report sadness, worry and stress. Likewise, experiences of worry and stress increased the probability of reporting sadness subsequently. This also holds true when controlling for neuroticism (measured with the emotionality scale of the FPI-R, Fahrenberg et al., 1989), which was associated with reporting more negative emotional states.

In conclusion our findings suggest that the probability that different emotions are experienced is elevated within the larger context of one and the same emotion-eliciting event, and hence the probability of occurrence varies.



## **Representativity**

Scherer et al.'s reason for using the survey approach was to get representative population estimates of the frequency of the occurrence of various emotions. A basic question for every population survey is how well the sample represents the population.

In general, representativity is an ideal that is difficult to realize in social and behavioral research. Although the people invited to participate in a study can be chosen so that they represent the population fairly – as in the study of Scherer et al. – the participants who actually respond to the questions are always a self-selected subgroup. This subgroup is usually distinct from the population with respect to important characteristics (Rosenthal and Rosnow, 1991).

Most of the results Scherer et al. present are based on the responses of 1 out of 8 people who were asked to participate (from 8940 households 1520 questionnaires were returned, however, only 1030 questionnaires could be used because the quality of emotions were labeled). Thus, the population to which the results can be generalized is not defined by the people asked to participate in the study. It needs to be inferred from the characteristics of the subjects who participated. They belong to the subpopulation of the rather well-functioning, better-educated, German- or French-speaking people living in Switzerland who are willing to reveal their private experience to a research institution. Social minorities as well as people in a difficult physical or mental state are likely to be under-represented. However, one needs to mention that diary studies are usually far more selective.

## **Frequency estimates of emotional states from the First Fribourg Family Project**

After having discussed some potential threats that may bias Scherer et al.'s probability rates, we would like to compare some results from our diary studies with results from Scherer et al. Direct comparison of the relative frequencies is quite difficult, however, because of the different assessment methodologies underlying the two samples.

In our Table 1 we present frequencies of emotional states that were reported by the parents of the First Fribourg Family Project.<sup>6</sup> Feeling happy was the most frequent emotional state. An average

TABLE 1

Frequency measures of emotional states from 177 parents, who completed diaries 7 times per day over the course of a week (First Fribourg Family Project, Perez et al., 1998b)

	Percent of observations per person <sup>b</sup>		Percent of persons per day <sup>c</sup>
	<i>M</i> ( % )	SD ( % )	
Anxious, fearful, uncertain <sup>a</sup>	2.8	6.7	11.6
Sad, depressed, discouraged	3.1	4.8	14.5
Angry, furious, irritated	3.5	3.9	19.1
Ashamed, inhibited	0.5	1.2	3.3
Feeling sensitive or hurt	1.6	3.0	9.0
Tense, rushed, or nervous	12.4	11.1	46.3
Unsatisfied	5.4	6.8	25.4
Other negative feelings	1.3	3.8	6.3
Proud	5.3	12.1	19.1
Happy	28.3	25.0	62.8
Other positive feelings	2.9	6.3	12.4
Positive feelings <sup>d</sup>	28.3	23.6	65.4
Negative feelings	19.6	13.1	63.0
Mixed feelings	3.8	7.4	16.0
No feelings	47.9	23.3	9.8

*Notes:* • In addition the items tired/exhausted; quiet/relaxed/balanced; encouraged/motivated were presented, which we omit here because they were basically mood indicators.

<sup>b</sup> For every person the relative frequency (percent) of reports over time was computed. The group mean and standard deviation of these intra-individual percent scores are reported.

<sup>c</sup> For every day the percentage was computed of people who reported an item at least once. The presented percent score is the average over the seven days.

<sup>d</sup> Because multiple responses were possible, we classified different feelings that were reported at the same time as indicating either a positive, negative, or mixed state.

person reported happiness every fourth observation (Table 1, col. 1) and about two out of three people indicated feeling happy at least once a day (Table 1, col. 3). In contrast, in the Scherer et al. study, the happy emotions (happiness, joy and contentment) were reported by only every sixth participant. However, they were also the most frequently mentioned emotions there.

Feeling "tense, rushed or nervous" was reported by almost every second person in the family project at least once a day. The corresponding item in the Scherer et al. study – "stress" – was far less

frequent. The same was true for all the other items, but especially for pride and dissatisfaction.

One simple reason for this discrepancy is the fact that Scherer et al. asked the participants to label their emotions themselves. After classifying the items, they ended up with 38 different emotional states. In the family study, respondents chose from a list of 12 items. The basic probability of one or several items being chosen from a menu of 12 items is higher than the probability of the same items being freely listed. Therefore we cannot simply interpret the higher frequencies we get in our study as a support for our argument that Scherer et al. underestimate frequencies because they did not take into account that several emotions might have been experienced the day before.

However, the pattern of results also reveals some similarities with Scherer et al. If one ignores the items "feeling tense, rushed or nervous" and "unsatisfied", which were closer to mood states, the most frequently reported negative emotion in our study was anger, as in the study of Scherer et al. After anger, sadness and anxiety were the most frequent negative emotions in both studies.

According to our data intense negative emotions were very rare. When indicating the intensity of feeling anxious, angry or sad, participants reported in more than half of the cases that they felt that emotion only slightly. Only 5 percent of the sad and anxious experiences and 10 percent of the anger experiences were rated as strong.

The standard deviations in Table 1 indicate that individual differences were large. For example, there were participants who reported every situation to be happy, whereas other participants did not report even one situation in which they felt happy. This result indicates that differences between people might be due to differences in their emotional experience. However, they are also affected by response styles.

Aside from the many differences between the results in Scherer et al.'s study and our own, we can conclude that happiness tends to be the most frequent basic emotion in daily life, followed by anger, anxiety and sadness. Quite similar results have also been found in the studies of Myrtek (2004).

**Exploring situational factors that may affect the probability of experiencing emotions**

TABLE2  
Frequencies of different emotions in different settings reported by 140 parents of the First Fribourg Family Project who had at least one protocol in each setting

	Median	At home 75%-quartile	Median	At work 75%-quartile	Median	In public 75%-quartile	Pairwise Wilcoxon tests•
Happy	21.7	47.3	11.1	40.0	40.0	70.9	W<<<H< <P
Angry	2.9	7.1	0	5.5	0	0	P<<<H
Anxious	0	3.2	0	0	0	0	
Sad	0	4.3	0	0	0	0	P<<H
Tensed	8.3	17.6	16.7	42.0	0.0	16.7	P<H<W

*Notes:* Because distributions were heavily skewed the means and standard deviations are not adequate indicators and we therefore report the median and the 75%-quartile. The 25%-quartile was not reported because it was 0 except for happy at home (9.7%) and for "tense, rushed or nervous" at home (2.8%).

• H = at home, W = at work, P = in the public.

Direction and significance of the Wilcoxon test are indicated by the "larger than" sign: < ==  $p < .05$ ; << ==  $p < .01$ ; <<< ==  $p < .001$ .

Scherer et al. explored many factors that influence the probabilities of experiencing emotions. Closer examination of the analysis of situational factors may help to illustrate interpretational problems resulting from Scherer et al.'s approach. We will also emphasize the strength of the diary assessment in dealing with these problems.

In Table 5, Scherer et al. present "situational risk factors" for the most frequent emotions. They found that the work setting increases the probability of experiencing anger and stress, and decreases the probability of experiencing happiness and sadness. Likewise they found increased rates for anxiety and decreased rates for anger at home, but lower rates of stress in a public place. However, the conclusions that can be drawn from these results are limited by the fact that different persons report different emotions in different situations. As a consequence the sample on which the results are based is different for each emotion and rather small. Moreover, situational factors and characteristics of the person are unequivocally confounded.

The great strength of diary assessment is that, as information is gathered repeatedly in different situations, it is possible to analyze situational factors within persons, keeping personal characteristics constant. Thus, the interpretation of situational effects is less challenged by confounding effects due to differences between persons (Bolger et al., 2003).

On the basis of our data, we analyzed situational differences in the frequencies of emotion reports. For this purpose we computed the relative frequency of emotions for each participant when he or she was at home, at work or in a public place. As shown in our Table 2, the feelings of tension, being rushed, and nervous (i.e. indicators of feeling stressed) were most frequent at work, whereas feelings of happiness were the least frequent. So far these results are in line with Scherer et al. However, we did not find significantly increased rates of anger, nor did we find significantly decreased rates of sadness at work, and we found neither less anger nor more anxiety at home. In our study participants were more often happy and less often stressed at home as compared to the workplace. As our results show, participants felt best in a public place. That is where they most often experienced happiness and least often anger, sadness and tension.

Although these results are not challenged by confounding effects due to person characteristics, the local setting is only one component that goes along with many other factors that have been shown to

influence emotional states, such as the time of day, the presence or absence of other people and the current activity one is involved in

(Wilhelm, 2001). By using multilevel analysis (Goldstein, 1995; Raudenbush and Bryk, 2002), the effects of each of these factors can be estimated and controlled (see Wilhelm, 2001, for an analysis of the emotional state of family members). In our view such analysis based on data gathered with modern computer-assisted diaries or other ambulatory assessment devices (see Fahrenberg and Myrtek, 2001 for an overview) would be the most promising approach to explore the impact of different situational factors on emotional experiences in everyday lives.

## Conclusions

Scherer et al.'s study on "Emotions in everyday life" directs attention to a challenging research question. It focuses on the probabilities of experiencing certain emotions in everyday life, and on demographic, personal and situational factors that influence these probabilities. It addresses basic questions in research on emotions, emphasizing the ecological and external validity of the results. While it opens a new way of looking at emotions, it also raises methodological questions concerned with the internal as well as the construct validity of this method.

The advantage of the research approach adopted by Scherer et al. is that it allows the investigators to obtain large samples, of more than 1000 participants, which might represent a good part of the variation within a certain population. Therefore, population surveys are a well-suited strategy if one wants to explore the impact of different demographic variables and personality characteristics that are widespread throughout the population.

We have discussed the problems of the study of Scherer et al. that appear from the viewpoint of diary research. One problem was the retrospective recall bias. This effect has been shown to operate even if the time lag between an event and the recording is under 24 hours. Two other problems made reliable estimates of the frequencies difficult. Scherer et al. were not able to estimate how many subjects did not experience any emotion on the previous day. On the other hand, many people might have experienced more than one emotion the previous day, but had to select only one to report.

Ali attempts to acquire knowledge about the frequencies of emotions in daily life are somehow confronted with the conceptual problem of how moods and unspecific emotional states can be distinguished from emotions. Although Scherer et al. tried to solve this problem by asking people to report events that caused an emotion, some of their participants reported states that could be classified as mood states rather than emotions (e.g. interest, relaxation, dissatisfaction). However, this problem is even more severe in diary approaches, in which only the state, but not the underlying event, is assessed (e.g. our own studies or the studies of Myrtek, 2004).

In future surveys one could avoid some of the problems we have discussed here by asking potential participants to report every emotional event they experience the following day as rapidly as possible. In addition, results from the Scherer et al. study should be used to provide participants with a menu of frequently used emotions. This would help to obtain less idiographic responses that are better comparable.

For studying the influence of situational factors as well as the influence of personality on the emotional experience in more depth, though, we would recommend a computer-assisted diary approach.

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## Notes

1. We think the appealing term "risk factors" is somewhat inadequate. It suggests that emotions were rather dysfunctional affective responses, and it ignores their important adaptive function.

2. We computed the percentage of people who indicated at least one emotion per day, and we did it separately for every day of the observation-week. The percentage we report is the average percentage over the seven days of the week.

3. Myrtek's studies were designed to answer the question whether emotional experiences are accompanied by changes in the physiological system that can be detected via interoception. He showed that in everyday life this is not the case. The perception of emotions was not linked to changes in the physiological arousal. However, it was linked to the evaluation of the situations according to cognitive schemas. In addition he also found large individual differences.

4. For every family member we computed how often he or she reported each emotional state item during the observation-week. In addition, we computed in how many situations positive, negative or mixed states were reported and how often no emotion was indicated.

5. Respondents were asked to choose between three intensity labels, with the highest intensity being nearest to the respective scale anchor (a little, quite, highly). In order to operationalize emotional experiences rather than mood states, we identified only statements of negative emotional experiences by targeting ratings of "quite" and "highly", i.e. the scores nearest to the negative anchor label on the six-point scale. In contrast to positive indications, these statements can be regarded as relatively distinct experiences because they clearly depart from the averages (on the scales ranging from 1 to 6, means range between 4.60 and 5.08; SOs range between .97 and 1.16) and thus they can be understood as assigned to the respective scale anchor. Using logistic regression analysis, we predicted the occurrence of emotional experiences during four observation units by a prior emotional experience (dummy-coded variables), given that subsequent to the prior experience, no emotional experience was recorded.

6. We only report data from the parents of our study to keep our results comparable with those of Scherer et al. Our parents can be regarded as belonging to almost the same population as that from which Scherer et al. recruited their participants. However, there is one exception that needs to be mentioned. In addition to 33 German-speaking and 50 French-speaking families, we also took 13 families from the Italian-speaking part of Switzerland. Scherer et al.'s participants were taken only from the German- and French-speaking parts.

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